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This presentation introduced the theory and practice of psychomotor education as developed by de Ajuriaguerra and Naville at the University of Geneva. Some overlap of their concepts and principles with perceptual motor training methods occurred in the United States, according to the authors. The focus of the theoretical discussion integrated developmental and personality concepts from psychoanalytic theory and Piaget cognitive theory. Four "practical" aspects of psychomotor education were also discussed: (1) its structure, which included basic elements of motoricity, body ego, organization in time and space, and education through movement; (2) its indications in psychomotor disorders, which included motor debility, inhibition, and hyperactivity; (3) its application in practice; and (4) some pedagogical considerations. It was noted that training procedures modify body motor symptoms and signs and make possible the use of the body in emotional expression, social relationships, and the development of body skills. Further research was suggested to establish more clearly the relationship between mental and motor development. (JS)

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PSYCHOMOTOR EDUCATION- THEORY AND PRACTICE[1]

Suzanne Naville[2] and Gaston E. Blom, M. D.[3]

Psychomotor education as presented by the authors represents a method of body training for children in the development and correction of motor skills, of body image and laterality, and of the body in space and time. This method was developed by de Ajuriaguerra and Naville at the University of Geneva. It has not as yet been introduced into the United States although some of its aspects have been used by various professionals in the field of perceptual-motor training. These clinical and theoretical contributions have some overlap with the work of de Ajuriaguerra and Naville.

One of the authors, Naville, is a clinical teacher and practitioner of psychomotor education in Geneva. She directs a training program for practitioners of psychomotor education at the University of Geneva (Institut des Sciences d'Education) and is herself a member of the staff of a treatment and diagnostic center for developmentally disturbed and handicapped children, affiliated with the School Department of Geneva. Her training and background experience was in child psychology, movement training and music education. For a number of years Naville was looking for more meaningful theory and practice in body training for handicapped children: for movement, body skill, body in space, rhythm and socialization.

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In 1960 she met de Ajuriaguerra and found a scientific basis for her work. De Ajuriaguerra on the other hand wanted a practitioner who could apply his theoretical concepts about the body and body disturbances in the treatment of children with psychomotor disorders. The meeting became a fruitful alliance. Eventually a training program was established in 1964 for psychomotor education, an intensive program of two to three years under the auspices of the University of Geneva. The training consists of theoretical aspects from de Ajuriaguerra and from Piaget and his school, psychomotor methods and techniques, demonstrations, individual supervision and practicum experiences. Twenty-five candidates from the fields of music, special education, physical education and psychology have been trained, two of whom are now practicing in Montreal. Naville has presented her work to various professional groups in a number of foreign countries in Continental Europe and in Canada (Naville-Asper 1964, Naville 1966).

The other author, Blom, is the director of the Day Care Center, a psychoeducational facility at the University of Colorado Medical Center for emotionally disturbed elementary school age children with academic and social problems usually manifested in the school situation. The program of the Center integrates clinical and educational evaluation and approaches to children utilizing a multidiscipline staff of mental health professionals, teachers, and pediatricians and further resources as necessary of a university medical center. A number of publications have described certain psychoeducational aspects of the program (Blom, 1966;

Blom, Rudnick and Searles, 1966; Blom, Rudnick and Weiman, 1966; Cooke and Parsons, 1968; Ekanger and Westervelt, 1967; Blom and Parsons, 1966; Rudnick and Berkowitz, 1968; Sadler and Blom, 1968). This program has been particularly interested in the psychological aspects of the body and its functioning in children. This has taken the form of: 1) body training and physical fitness and its influence on learning and generalized adaptiveness as ex mplified in a physical education program (Guthals, 1967) and 2) perceptual/cognitive training activities in both individual and group sessions, using operant principles in some instances (Cooke, 1968; Cookeand Parsons, 1968). Beyond these specific activities the Day Care Center staff has had periodic questions about children that relate to body image and body skills of various kinds--body/self esteem, the control and use of the body in a variety of ways, directionality and laterality issues, the body in space and time, fine motor skills, spatial orientation, bodily experiences of children past and present, and questions about neurophysiological disturbances as they influence body functioning and learning.

Particular cases have demonstrated certain body problems that appeared to have an influence on many areas of personality functioning (social, academic, and intrapsychic) or that have been reflections of personality disturbance. A number of illustrative case examples can be cited from the more simple situation such as Teresa and her obesity, Lois and her small size; to the more complex such as Larry with concerns over

his body integrity, the defense of a mental computer to deny his body, the obvious existence of perceptual-motor problems and other body motor deficiencies; Kenneth with his scoliosis posture which made the body secret and extended to more generalized secrecy so as to effect learning; and Keith with his periodic arm and hand flapping at times of excitement and tension. Other cases have demonstrated clumsiness, hyperactivity, inhibition and direction confusion and uncertainty. Field days[4] have provided a particular opportunity to observe body movements and attitudes of the children at the Center. Clinical impressions of these body disorders have been that they were related to how such children moved in space, how objects in space were perceived and manipulated, and how learning tasks were approached and performed.

With these common interests the authors developed a correspondence which eventually led to a visit by Naville to Boston University in the summer of 1967 where she presented three lectures on psychomotor education in English for the first time and conducted two clinic demonstrations focused on psychomotor disorders. It is on the basis of the lectures, demonstrations, and further discussions of the authors that an introduction to psychomotor education will be presented in this paper.

Psychomotor Education - Theoretical Aspects

There is a great deal of literature that focuses on practical and theoretical aspects of perceptual motor training and its various extensions

[4]Once a year in the early summer group and individual running and jumping competitions are held with all children participating.

into body schema, laterality, and space and time orientation. Considerable current interest exists in body training for children: as a precursor to more formal learning, as a remedial method in learning disabilities and behavior disorders, as a part of developmental experience such as physical education, rhythm, and dance, as a therapeutic approach to personality disturbance in children and adults, as a treatment for psychomotor and neuro-motor disturbances, and for other goals as well. Both therapeutic and educational aspects are stressed in these contributions which come from a variety of disciplines and fields--optometry (Getman, 1965), physiotherapy, occupational therapy (Ayres, 1963), physical education (Kephart, 1960), special education (Cruickshank, 1961; Frostig and Horne, 1965; Kirk, 1962; Salkin and May, 1967; Shrager, Lindy, Harrison, McDermott and Wilson, 1966), rhythm-dance-and music (Dubnoff, 1966; Laban, 1960; Lamb, 1965) neurology (Bender, 1956; Critchley in Wapner and Werner, 1965; Delacato, 1966; Le Winn, 1966; Schilder, 1950), psychology (Flavell, 1963; Hebb, 1949; Santostefano, 1967; Solley and Murphy, 1960; Wapner and Werner, 1965), and psychiatry and psychoanalysis (Deutsch, 1947; Hecaen and de Ajuriaguerra, 1964; Hoffer, 1950; Kaplan, 1965; Kestenberg, 1967; Kubie, 1934; Levy, 1944; Mittelman, 1954; Scott, 1951; Shevrin and Toussieng, 1962; Wolff, 1963).

Most of the contributors who present a theoretical base for their work integrate concepts from a number of theoretical frameworks. These integrations are for the most part insufficient or incomplete in that they

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stress neuromotor-developmental-learning integration or psychomotor-developmental-psychological experience integration. There is very little information available on the evaluation of the training and therapeutic methods used and of the evidence for generalization of trained skills to other behaviors (cognitive, social, and intrapsychic). When dealing with perceptual-motor training procedures, some workers stress perceptual information, others motor aspects, and still others cognitive elements. Therefore a critical comprehensive review of the literature which synthesizes the many contributions to this field becomes very difficult and will not be attempted. The authors have found themselves involved in a number of areas closely or more distantly related to the psycho-motor and neuro-motor fields--kinesiology, optics, perception, cognition, dance, rhythm, music, neurophysiology, neuropsychology, experimental psychology, body phenomenology and neuropathology. The work of Ayres (1963), Dubnoff (1966), Dunsing and Kephart (1965), Frostig and Horne (1965), and Kirk and McCarthy (1961) should be particularly cited since these authors have contributed diagnostic and training procedures which are in wide use today within special education programs in the United States.

In this presentation the authors will limit themselves to the theoretical aspects of psychomotor education as developed by de Ajuriaguerra and Naville. This theory integrates Piaget and psychoanalytic concepts but does not deal sufficiently with neuro-motor, neuro-physiological, neuro-psychological, and psychophysiological concepts. However, it is

conjectural whether such a comprehensive integration is possible given the current state of our knowledge.

In the developmental psychologies of Freud and Piaget there are certain commonalities in the central issues of the body. Freud states that the ego is first and foremost a body ego (Freud, 1961). There is then a gradual shift from body ego to mental ego. The drives are also organized around erogenous zones of the body. Erikson (1952) extends these concepts of zones to basic body mode properties which interact with the environment in the development of modalities of behavior that are further dissociated from the body. He further develops ego identity concepts of space and time qualities in the individual as well as in a collective sense, ie. ego attributes of the culture. Both Freud and Piaget see development as occurring as a consequence of maturation and social and biological experiences. What Freud defines as the body ego is not too clearly stated nor has the concept been used uniformly and clearly by psychoanalysts since then. The body, in addition to its relationship to the self, functions as the contact with the outside world, most importantly to animate objects but to inanimate as well.

White (1963) constructs a competence model within psychoanalytic theory to explain the development of ego skills and of reality relations. He builds on the psychoanalytic concept of independent ego energies (Hartmann, 1958) and on Piaget's sensorimotor schema (Piaget, 1952) indicating that exploration, locomotion, experimentation and investigation

are not necessarily erotic or destructive in their aims. Such activities occur in states of satiation and obtain satisfaction from the effects they produce, called efficacy. They are equated with inherent energy of the nervous system, and have importance in the formation of psychic structure. It is through exploration and investigation that one learns to deal effectively with the animate and inanimate environment. Competence then develops as a capacity to interact with the environment and as a feeling state of self-esteem and adequacy which are accumulated and organized from experience.

Therefore one sees the body psychoanalytically as the organizer of drives, the avenue for expression of drives and feelings, the means of contact with the outside world, the developer of skills for mastery of the environment and for the achievement of competence gratification, and a precursor to mental activity. These functions occur as a consequence of innate givens, constitutional factors, maturation and experience (including training).

The centrality of notions about the body also exists within Piaget epistemology (Flavell, 1963). Biology strongly influenced his concepts about cognitive development. Piaget sees thought as interiorized action.[5, 6] Piaget uses logical structures to describe the organization of motor acts and interiorized thought. These structures do not just come from questions

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[5]Freud (1911) sees thinking as substituting for trial and error action aided by memory.

[6]Hebb (1949), a neuropsychologist, sees mental life as motor life.

put to the child but from his concrete manipulation of objects put to him. They emerge from organism-environment interaction.

Ajuriaguerra[7] provides a synthesis to the psychological aspects of the body from psychoanalytic body ego concepts, Piaget cognitive concepts, organismic developmental studies, and contributions of neuropathology and perceptual physiology (Ajuriaguerra, 1961, 1968). He indicates that the body image or body schema is not reducible to the perception of the body. Ajuriaguerra (in Wapner and Werner, 1965) refers to various dispositions and phenomena associated with the body and groups them into two aspects that are complimentary: 1) a cognitive aspect--the body as it is known and 2) an affective aspect--the body as it is experienced. He draws parallels between these aspects, for example Piaget's sensorimotor schemas where the child deals with objects in his environment and Wallon's tonic-emotional reactions in which the child deals with persons in his environment.[8] According to Ajuriaguerra, Spitz considers two aspects of perception in the child's experience both of which imply gratification and emotion. One aspect is mediated by the sensory system that deals with "state of being" mediated through interoceptive channels, the experiences of pain/pleasure. Ajuriaguerra does not further elaborate on Spitz's contributions other than to mention that the body ego begins as a directing and controlling organization for inner needs and outer experience around three months of age.

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[7] Ajuriaguerra is Professor of Psychiatry at the University of Geneva and is trained in neurology, psychiatry, Piaget spistemology, and psychoanalysis.

[8] Spitz refers to this as the mother-child dialogue (in Gaskill, 1964).

Spitz (1957, 1965) has been interested in the development of self and object relations as a consequence of maturation and environmental experiences. These experiences operate along the dimension of gratification/frustration through the mother-child dialogue. Spitz has dealt with many polarities such as what's inside/what's outside, I and non-I, animate and inanimate, I and me, familiar and stranger, self and others.

Sanders (1962, 1964) has been interested in mother-child transactional issues in a psychoanalytic developmental framework. He refers to the child's explorations of his own body at 6 months which leads to a body image on which the self-image is based. From 8-10 months motor development enlarges the life space. Stranger anxiety develops and object permanence also develops. From 11 - 14 months locomotor development creates distance from the mother and makes possible self-initiated activities. Self/others begins differentiation. Standing and walking when accomplished supports pride and mastery particularly when reinforced by the mother. In these issues motility is a central concept and how it is responded to on the part of the environment, particularly the mother, influences its outcome and gains to the personality.

Hoffer (1949, 1950) refers to hand-mouth activities of infants as being part of the early body ego. He also presents the example of touching oneself where there are two sensations: felt and feel. Felt is body, belongs to the self, and is mediated by inner perception, pleasure/pain perception, and proprioception. Feel is the environment and objects,

belongs to the non self, and is mediated by outer perception of vision, audition, olfaction and touch. Kestenberg (1967) states it similarly in that the periphery of the body retains a double representation -- the self and the need satisfying object.

The cognitive aspect of the body and body-object differentiation is developed by Piaget (Flavell, 1963). Central to Piaget is thinking as internalized action, ie. thought proceeds from action. The body image is internalized imitation and imagery. According to Piaget during the sensori-motor phase of development (0-2 years) the infant conceives of the external world as a succession of images disappearing and reappearing in connection with sensori-motor experiences, the experience with and manipulation of objects. The notion of the body is one of action occupying a practical or action space. Action and body, action and response, and body and world are not dissociated.

During the preoperational phase (2 - 7 years) activities are clearly perceived as images but the images still depend on these activities to create them. This is a transitional phase between sensori-motor and concrete operations. The child can make meaningful gestures with his body and name some body parts. Laterality is in the process of being established.

When space, time, and causality concepts develop in the phase of concrete operations (7 - 11 years), objects become more permanent and no longer depend on action and perceptual cues to be represented. The internal and external are clearly experienced and distinguished from one

another. Objects can be classified and viewed from different perspectives. Spatial operations are well developed.

Ajuriaguerra (in Wapner and Werner, 1965) indicates that notions of the body correspond to levels of integration and cognitive functions. Well-articulated bodies have well-articulated actions with and conceptions of the external world. He then makes links to neurological phenomena and perceptual physiology, reporting on disturbances in body action and conception from cases of brain damage. In terms of perceptual physiology he relates exteroceptive functions -- auditory, tactile, visual -- to differentiating the environment and interoceptive, nocioceptive, proprioceptive functions to differentiating the body. He notes that there can be selection differences in sensory modalities among individuals as to their dominant frames of reference. In summary Ajuriaguerra states that the concepts of the body -- as it is perceived, represented, and experienced -- have different meanings at different moments of development. Development progresses as a consequence of maturation and experience. In the organization of perception and conception of the body there is an interdependence of cognitive and affective activities.

The significance of body movement in the process of development and in its functions in personality organization from a psychoanalytic viewpoint has also been discussed by Mittelman (1954) and by Kaplan (1965). Mittelman develops more generalized concepts about motility while Kaplan

focuses particularly on motility during the latency period of development. Both authors integrate psychoanalytic and Piaget concepts about the body.

Mittelman views motility as an urge since it has characteristics and qualities of other urges (drives). It is viewed as having ego and libidinal/aggression aspects, and can subserve other strivings (oral, anal, phallic and genital). Motility is characteristic of all age periods but begins a particular dominance during the second year of life and goes through a developmental process of change. Motility is influenced by cogenital givens, maturational change, and environmental experience including cultural customs.

Motility has a number of functions which are interrelated. One group of functions is affective-motor expression of joy, rage, anxiety, and depression. This expression is demonstrated through various motor patterns, motor intensity, and tempos or rhythms. While such expressions go through a process of developmental change, early patterns and characteristics can be revived under later intense affective experiences or they become fixated as a result of maturational and experiential factors. Affective-motor expressions also acquire a communicative element with others.

Another function of motility concerns the relationship between the self and the environment. It makes possible under usual conditions greater independence, self assertion, and positive self esteem. Motor imitative identifications also take place with significant persons in the environment

who are aggressors, prohibitors, and powerful and loved ones. Motor activity patterns develop in a reciprocal interchange with people in the environment--active and passive patterns in different contexts. Perceptual-motor activities lead to the evolution of self image and the differentiation of self/others.

A further function of motility concerns the development of ego functions of mastery, reality testing, integration, and self preservation. Repetitive motor actions lead to contact and experience with objects both animate and inanimate. Together with perceptual coordinations, in particular vision, the reactions of such objects and the consequences to the self in the form of pain and anxiety lead to more adaptive motor behaviors. Fine motor skills further make possible skilled, creative, and culturally valuable activities. Motor manipulation together with perception and speech is the precursor and model of thinking. One also sees motility as a defense against outer and inner dangers--the fight or flight reaction.

Mittelman also views motility as the evolution of aggression (as a drive) but is not very clear about differentiating hostile and nonhostile aspects. He also relates motility to the development of conscience through motor injunctions and fear of motor retribution.

In summary, Mittelman indicates that motility has a number of important interrelated functions: 1) in affect expression, 2) in subserving other drives for expression, 3) in relating to and communicating with the outside world, 4) in the development of self-body image, 5) in the development

of ego adaptations--mastery, reality testing, self preservation, and cognition, and 6) in the development of conscience.

Kaplan (1965) stresses the central significance of motor activity during the latency period at a descriptive behavioral level as well as at a psychoanalytic theoretical level. She reviews the psychoanalytic literature on motility and focuses on how motility effects the ego, the superego, and the vicissitudes of drives during the latency period.

According to Kaplan, Hartmann conceives of the functions of perception and motility as having original primary autonomy belonging to the conflict free sphere of the ego. Motor activity attains a pleasure in functioning per se and in mastery of the body. Such activity also becomes the avenue for expression of erotic and aggressive drives, particularly so during the first two years of life. In addition the sensori-motor activities differentiate what belongs to the self (body) and to the outside world. The repetition of these activities results in perceptual-motor learning.[9] In overall development there is a change from automatic, rhythmic, spontaneous motor activity to gradually more purposive, intentional, and voluntary acts.

Motility during the latency period undergoes further development. Kaplan relates this in part to further maturational change--EEG developmental changes and further myelinization of cortico-thalamic tracts in the central nervous system. In early latency there is further elaboration of the body

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[9]Intelligence measures during the first three years of life are based largely on perceptual and motor skills which do not clearly predict later intelligence measures.

image in terms of laterality and directionality. While a six year old can tell left and right on his own body, he cannot do so on others (objects in space, self in movement). By age eight this is well developed as well as some capacity to orient his body to side movement. Form and space discrimination develops more fully. There are sexual differences in muscle strength, endurance, and movement patterns.

In early latency when the superego is not yet fully incorporated into the personality one sees wavering control over motility (release and inhibition of drives) so that there are difficulties in sitting down to read and write. Repetitive motor automatisms (jiggling, nose picking, snuffing, tapping, etc.) appear again as they did during other transitional motor maturation periods (sitting to crawling, standing to walking). Motor games and activities gradually replace these automatisms and achieve expressive-control balance, relationships to peers, and various body skills. Heroes during this time are people of action, more obvious for boys than girls.

In later latency when the superego is less of a foreign conflicting element a more even balance in personality is achieved reflected in effective motor control. Fine motor skills have also developed and offer new expressive opportunities. Motor skills in general become more voluntary and purposive.

The centrality of the relationship between personality and body movement has been particularly noted by Kestenberg (1967, 1968). The

Movement Study Group to which she belongs has been able to develop movement profiles to describe individual and developmental personality characteristics using the Laban system. The Laban system is a movement notation related to dance which contains concepts such as body shape flow, body tension flow, near space, reach space, and general space. Kestenberg integrates psychoanalytic concepts with these body and space notions. Her group can perform a comprehensive psychological assessment of children and adults from carefully noting movement patterns, gestures, and postures. This assessment forms the basis of a treatment program which includes motor expressive activities.

Psychomotor Education - Practical Aspects

Given these theoretical propositions, how does one apply them to the diagnosis and remediation of body/environment disabilities? The practical aspects of psychomotor education will be presented in three aspects:

I. Structure

II. Indications

III. Application

IV. Pedagogical Notes

I. Structure

The use of body movement in special education poses a problem of method. While much is done by intuition, there is a need for structure on which to orient oneself. One must try to explicate and therefore make

more rational what is usually done only intuitively. Psychomotor education needs methodology and intuition, therefore a well adapted application.

In Naville's experience psychomotor education is not applied alone but in a team of psychiatrist, psychologist,[10] social worker and teacher. The teacher is particularly able to provide observations about a child in a group. Through movement one observes many things about a child because he is often not as guarded or as skilled under such conditions. Psychomotor education then is seen as a part of the total therapeutic educational program for a handicapped child.

Psychomotor education is applied in a primary way to psychomotor disorders and emotionally disturbed children. It is also one of educational tools for mentally retarded, blind, deaf, and brain injured children where the goal is the integration of body handicap(s) into life adjustment.

Psychomotor education has a number of objectives: to improve motor disorders that are not a consequence of brain damage or brain lesions; the difficulties are functional and may be due to developmental lags; to readjust emotional disorders; the body reflects emotions through mannerisms, postures and gestures; by movement one can in turn influence emotions; to foster social behavior; there is usually a lack of normal interaction with other individuals and groups.

Psychomotor disorders arise as a consequence of a number of factors which often become interactive in their influence. These factors

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[10] The psychologist evaluates personality issues and cognitive operations.

include developmental, constitutional, environmental, tempermental areas. A child's body instrument may be normal, yet it does not respond to motility needs or there may be a lack of inner need to move. In other instances there is material blocking or a deficiency of social environmental experience conducive to appropriate motor development. Children have difficulties when they have not experienced jumping, climbing, ball playing and other forms of motor play.

Psychomotor difficulties consist of motor clumsiness, poor coordination, inhibition and hyperactivity. These have in turn consequential effects in the child and in the environment. The influences go from the environment to the child and the child to the environment. Therefore one should try to correct these difficulties early.

From a body motor viewpoint, Naville refers to the child as a house with building blocks. In the normal situation it appears organized and integrated while in the abnormal situation it is disordered as indicated in Figure 1.

Normal Abnormal

Figure 1. Body Motor Equipment

The task in the abnormal situation is to bring together and remodel the blocks. Psychomotor education attempts to accomplish this through movement in four aspects of a cycle: 1) realization, 2) signification, 3) motivation, and 4) socialization. These four aspects are interrelated and interactive. Each aspect facilitates other aspects and all four should be in eventual harmony as an end result.

One starts with realization and proceeds to the other three. This means experiencing movement and with this, achievement, gratification and confidence will result. With repeated movement competence develops.

Movement must also have signification in that it has a purpose and goal outside one's self; it can influence people and objects in the environment. Movement attains recognition and becomes adapted to learning and communication. This leads to preparation for symbollic communication and abstract abilities. Gestures and movements become messages and signs that have meaning.

Motivation is an essential aspect of movement activities. There needs to be a desire to do, accomplish, and not give up trying. With motivation various movement experiences and potentialities open up and develop. As this occurs greater realization and signification result which in turn increases motivation.

Movement also achieves socialization, ie. contact and interaction with other people. It becomes possible to function in groups. Again there is facilitation of other aspects of the cycle: realization, signification and motivation.

Since movement has so many possibilities, there is a need for a structure, a map or a plan. There should be an orientation base to determine what is selected in what way for which child and what movement is used for what objective at what moment. Without a structure movement becomes confusing, haphazard and planless. Figure 2 shows a schematic structure for psychomotor education.

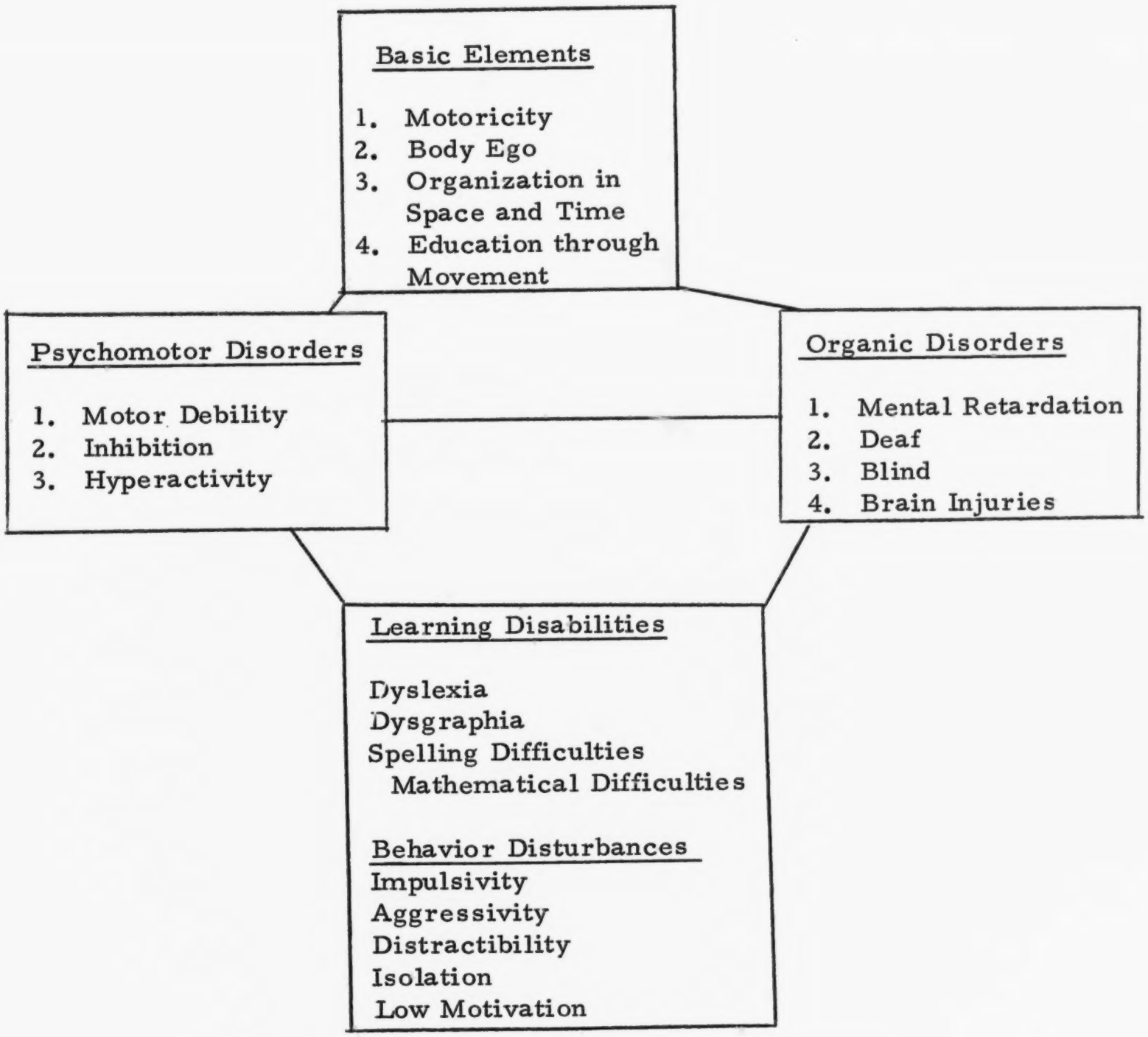

Figure 2. Structure of Psychomotor Education

One begins with body movements that are contained within the basic elements. These basic elements are applied to psychomotor disorders and organic disorders.[11] It is important to realize that organic disorders can be associated with psychomotor disorders. Learning disabilities and behavior disturbances can or cannot be the partial resultant of motor disorders.

Psychomotor disorders are a direct indication for psychomotor education, whereas for organic disorders it works only on a complementary basis. For learning disabilities and behavior disturbances psychomotor education builds a general base on which specific and specialized treatment (education and psychotherapy) is built. One does not attack these symptoms directly but provides psychomotor correction which will facilitate additional approaches to disordered behaviors. For the purpose of this presentation the authors will limit the discussion to psychomotor disorders. The application of psychomotor education to organic disorders, learning disabilities and behavior disorders will be the subject of a future publication.

A. Basic Elements

1. Motoricity

Motoricity has a number of levels which are arranged in a stepwise progression: a) global movement or total movement -- a child has to first live his body and achieve more complete recognition of its possibilities;

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[11] Some of the basic elements are adapted and modified for the needs of children with organic disorders.

these total movements prepare for body ego developments; b) dissociation and coordination -- these activities favor voluntary movement and decrease involuntary and associated movements; for dissociated movements one body part is moved while another part is fixed; the child learns different parts of the body and puts them into movement separately; exercises in dissociation have different objectives -- to prepare for coordination, for body ego exercises through being conscious of body parts, and for laterality; coordination consists of two body actions or parts in movement interrelated in time; it makes use of dissociation accomplishments and is introduced when sufficient dissociated movements are possible; c) fine motor movements -- these are largely hand and finger movements involved in manual activities; one starts with the whole arm and progresses slowly to finer and finer movements, eventually of the finger tips; d) relaxation --relaxation is achieved through movement by first increasing and then decreasing tonus; this is sometimes facilitated by touch and vision, later by imagination; it is presented by contrast such as a snowman is frozen (tight) and then melts (relaxation) or a cat is furious and then curls up to sleep.

2. Body Ego

Body ego deals with the body as it is experienced, perceived, and represented. The representation of the body is the body image. The movements here build on the exercises of dissociation to achieve familiarity with the body and body parts in as many movement experiences as possible. Further activities deal with laterality -- the right and left aspects of the body. Laterality is achieved on one's own body and the concept of body

axis is established. Then one transposes laterality into the space near at hand and then in relation to objects and other persons more distant. This evantually leads into directionality.

3. Organization in Space and Time

This involves a number of levels in a progression.

First is visual and auditory concentration. There are three steps -- just momentary attention, then prolonged attention with effort, and finally imprinting and memorization when attention can be held. First, one uses simple sign or sound cues, then sequences, and evantually a pattern that can be repeated.

Second are the space concepts that go with the body. These are basic space notions that have to be integrated -- in front, behind, besides, around, above, and under. The body is the point of reference. From there one deals with interrelationships of objects in space.

Third is orientation in space. This is only possible when a child has assimilated the basic notions so that he can direct himself to objects and locate himself in relation to different objects. The activities involve finding things, going from one point to another point in space, and then structuring the way to go in space.

Fourth are time concepts. These involve basic time notions such as before, after, later, long and short.

Fifth involves structuring of space, structuring of time and then interrelating space and time. These activities require visuomotor

adaptation -- a certain amount of tension (strength) is necessary to move an object a definite distance (visual estimation). It is only after orientations in space and in time have developed and one has a mentally prepared structure that structure of space and of time develops.

Sixth are metric and rhythm concepts. The activities involve regular beats in different speeds that can be maintained and changed. One goes from the simple to the complex beginning with a regular beat, then with an accentuation, and finally with a pattern.

4. Education through Movement

The objective in education is to use movement as a way to stress educational achievements of will power, concentration, obedience, self control, and social adjustment. Movement particularly facilitates these objectives and special exercises are developed to accentuate them.

II. Indications

Harmonious motor development is endangered when early childhood motor occurrences are restrained, spatial experiences are restricted and human contacts are disordered. In psychomotor education, three bodily functions are important: the body as a medium for expressing ideas and feelings, the body as a pivot, reference point, from which spatial occurrences are experienced, the body as a means of contact with the environment. Psychomotor disorders arise when these functions are disordered and not in harmony.

Psychomotor disorders can be divided into a number of groups (see Figure 2):

1. Motor debility

2. Inhibition

3. Hyperactivity

In motor debility there is normal intelligence with retardation in motor area. The child has motor potentials but does not use them. The external signs consist of clumsiness, "paratonia" (tense muscles which cannot be released by will), associated movements and therefore difficulty in dissociation, involuntary use of the whole body in movement, poor coordination, defective use of finer motor discriminations. Educational efforts usually start with total movement.

In inhibition there is restriction in body movements, movements are shrunken and small, and often compliance in the classroom. The object of training is to liberate the child through encouragement and the achievement of pleasure and gratification from movement. One usually begins with small movements.

Hyperactivity poses special problems that are difficult to evaluate and treat. There are three groups that can be differentiated:

1. Neurologic types consist of motor outbursts; neurologically there are no gross abnormalities but there are often borderline abnormal electroencephalograms and soft neurological signs; psychomotor education is not specially applicable but can be helpful.

2. Hyperactivity with other psychomotor difficulties, i. e. lacking in motor skills; the child does not master his body and reacts with

instability; the more he becomes hyperactive there is less mastery of body motor skills; there is usually a vicious cycle of running, agitation, running, agitation.

3. Behavior that is hyperactive without neurologic-like signs and psychomotor difficulties; these cases seem anxiety driven and have difficulty with social contact; the hyperactivity can be controlled by will if the child is motivated. Treatment tries to stop, organize, and channel movement at regular intervals. As a general therapeutic rule one first provides total movement and then tries imperative stops. As stops become more frequent and longer, movement can be organized through various procedures. One also tries to take in the total movement so it can be channelized.

III. Applications

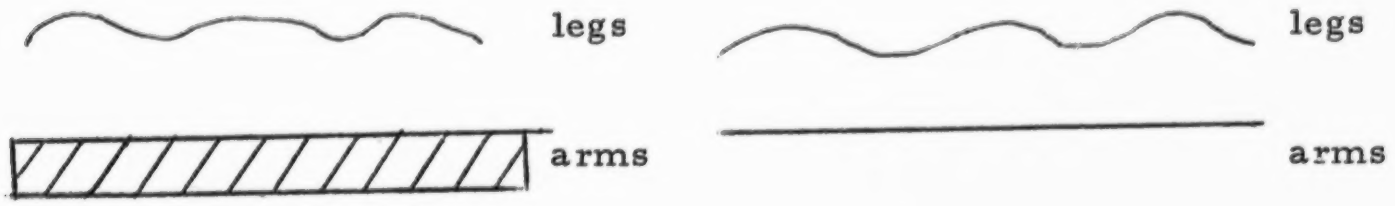
The above disorders can be treated with the assistance of psychomotor methods, i.e., the basic elements translated into specifically selected and supervised body movements. By movement and through movement, often animated and sometimes supported by appropriate improvised music, the child experiences, recognizes and learns to master his body. This movement furthers not only the physical capabilities of the child, but also influences the development of his personality and provides him with social interaction.

Some examples of different exercises can be given to illustrate psychomotor procedures.

1. Motoricity

One can walk with music with an accent on total movement. Then the walking can be interrupted with a shift to larger steps or a walk-run-walk sequence or a jump over an obstacle.

An example of dissociation between the upper part of the body (arms) and the lower part (legs) would be walking with the arms fixed. This can be facilitated at first by pushing a chair, carrying a hoop in front of the body or below the head, or placing a ball in the hands which is not to be moved. These facilitators can be modified, made simpler or removed (see Figure 3).



With Facilitation Without Facilitation by will

Figure 3. Dissociation

For fine motor movements one can lace shoes, put buttons on fingernails and drop them off one at a time, crumple paper with one hand and then spread it out with the other hand.

For relaxation imagination (snowman melting, etc.), rhythm and music are used.

2. Body Ego

Children with psychomotor disorders ignore this aspect. One tries to make the child familiar with many parts and positions of the body, i.e.

to enrich his body vocabulary. There are different types of exercises:

1. Imitation -- This is perceiving the body; a child imitates the teacher; one starts with static aspects, i.e. make a posture and then slowly change to another static posture; then dynamic aspects are stressed; the child does a movement with the teacher and then does it by memory; the teacher does the postures with his back to the child, to the side of the child, and in front of the child; there are time (immediate, memory), position (back, side, front) and type of movement (static, static to static, dynamic) factors in imitation.

2. Experimentation -- This is representing the body; the child has many ideas and finds patterns and kinds of movements himself from what he has learned; the teacher usually gives an objective and the child finds different ways it can be done.

3. Application -- The goal is to use what the child has learned through sequences; the child has to think them out beforehand and use them in a particular context that is staged such as the use of a ball, cord, and block provided by the teacher.

4. Creation -- This requires a great deal of mastery and will power to express freely in self-chosen movements; there has to be an order and synthesis to these movements.

Another part of body ego training is <u>lateralization</u>. A child may not be conscious of sides or may identify left and right in the static position but not with movement. One stresses the existence of both sides of the

body. A child should be conscious of a midline axis. First one knows laterality on one's own body and then transposes it outside one's body. This is assisted by an object that reflects an axis such as a cord which visually elongates the body axis and marks the separation of left and right (see Figure 4).

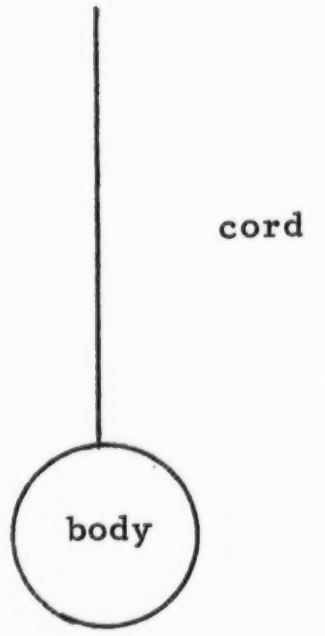
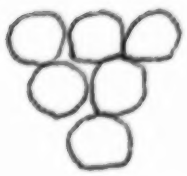


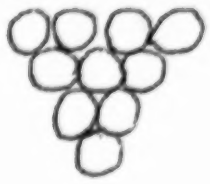
Figure 4. Assisting Lateralization

Later on one can introduce relative laterality, i. e. which object is more right than another object.

3. Organization of space and time

It is imperative to have obtained a certain degree of visual concentration before starting to train basic space concepts through movement -- above, below, around, besides, etc. Orientation in space first provides points of reference for the child and those then structure his movements in the room, e. g. a series of hoops can be used. A child is placed in a hoop and must move through all hoops without repeating one (see Figure 5).





more difficult

Figure 5. Orientation in Space Exercise - Hoops

To introduce the interrelationship between space and time one can structure a given distance by placing sticks in regular intervals which can be varied. The child first walks from stick to stick and then claps hands to the walking of another child. At last he identifies auditory signals with the various distances.

IV. Pedagogical Notes

An exercise is developed around an accent which one wants to stress. If the exercise is walking, one can accent body ego, laterality, space and time integration, orientation in space, space structure, or metric-rhythmic aspects.

A concise explanation and "appetizing" demonstration usually lead to better motivation and in turn to greater participation. These steps follow: explanation, demonstration, participation, and evaluation in the movement exercises that are used.

Equipment can help in motivating children, stimulating movement and developing a rich motor vocabulary. It may be any simple object at hand or a variety of items that are inexpensively purchased. Hoops for instance can be rolled, turned and glided. A child can jump in and over, or can crawl through a hoop without touching. A teacher can construct

forms out of hoops such as:

A child looks at the form and closes his eyes; a teacher takes one away or two away and asks the child to put it back in the correct position; a child can jump into the position rather than replacing the hoop which internalizes the form. In a similar fashion the possible uses of chairs, benches, balls, cords, sticks, plastic cups, colored markers, movie film rolls and bean bags could be illustrated.

A general lesson plan may contain four points (e.g., age 7-9):

1. warm up -- the goals here are to put the child in movement, to get attention and concentration and to have awareness of the group.

2. motor skill exercises -- these may have the goals of learning new skills, or consolidating weaker skills, or mastering old skills.

3. organization in space -- here one makes a choice of basic space notions, and works on orientation and structure of space.

4. synthesis -- this is an integration of what one did in motor skill, organization in space and social activity; it may be done in the form of a game or a socializing exercise.

A practical exercise based on this plan might consist of the following:

1. warm up -- one begins with regular walking to music; then upon a signal stand still and jump, opening and closing the feet; one can mark the room with markers that are visual signals to open and close the feet (see Figure 6).

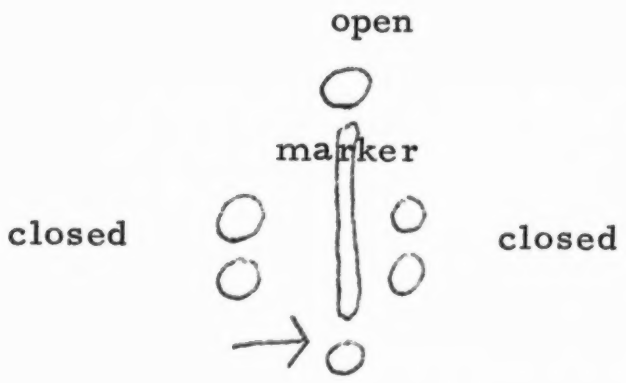


Figure 5. Warm Up Exercise

2. motor skill -- regularize a jump precisely by imposing two parallel cords as lateral boundaries; if there are difficulties, put on all 4s with feet jumping inside/outside and hands advancing outside; the same thing is done backwards (see Figure 7).

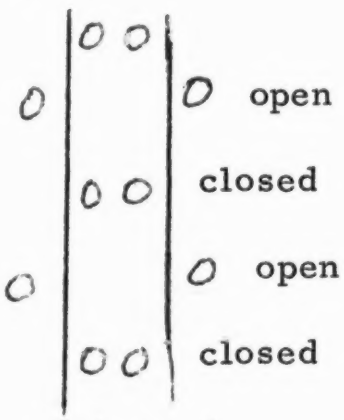


Figure 7. Motor Skill Exercise - Lateral Boundaries

One may use hoops as well as cords to force measuring ahead as well as side distance (see Figure 8).

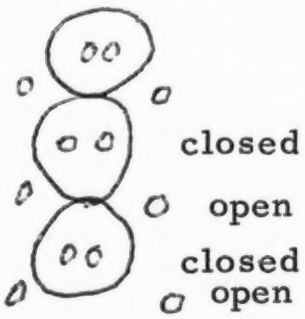


Figure 8. Motor Skill Exercise--Forward Boundaries

There can be more complexity involving more coordination and concentration (see Figure 9).

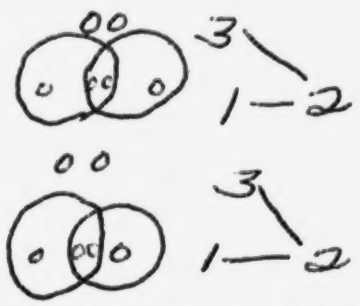


Figure 9. Complex Motor Skill Exercise

For dissociation -- one can jump using parallel cords or carrying an object in outstretched hands without losing it.

3. organization of space -- one places markers (colored sticks) on the floor at various places in different directions (1, 2, 3, 4, 5); the child jumps at all markers, adapting the jump to the position of next marker (see Figure 10).

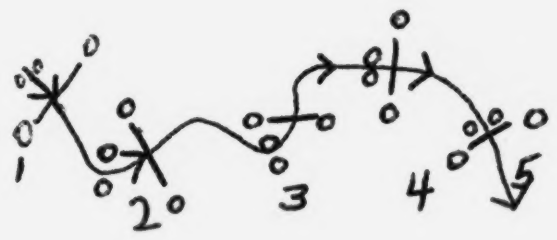


Figure 10. Organization of Space Exercise

4. for socialization -- roll a ball through opening and closing feet; child A rolls the ball, child B jumps open and close, child C waits and gets the ball (see Figure 11).

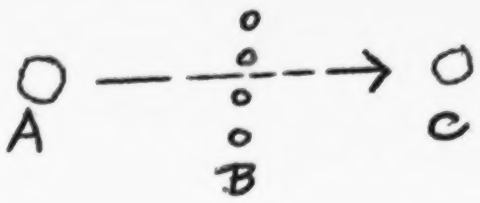


Figure 11. Socialization Exercise

Summary

This presentation has been an introduction to the theory and practice of psychomotor education as developed by de Ajuriauerra and Naville at the University of Geneva. There is some overlap of their concepts and principles with perceptual-motor training methods used by a number of workers in the United States.

The authors of this paper have discussed the theoretical background on which psychomotor education is based and to which it is related. The focus has been on developmental and personality concepts from psychoanalytic theory and from Piaget cognitive theory. The discussion integrates Piaget and psychoanalytic concepts. While it does not deal with other necessary integrations (neuro-motor, neuro-psychological, and psychophysiological contributions), it is doubtful that such a comprehensive synthesis is possible at this time.

Four practical aspects of psychomotor education have also been presented:

1. its structure -- the basic elements of motoricity, body ego, organization in time and space, and education through movement,
2. its indications in various types of psychomotor disorders,
3. its application in practice,
4. some pedagogical suggestions.

In this presentation the relationship of psychomotor disorders to learning disabilities and behavior difficulties has been implied rather than

been made specific. What seems more clear is that training procedures do modify body motor symptoms and signs, and make possible the use of the body in emotional expression, social relationships, and the development of body skills. While motor activity and skills appear to be precursors of mental activity, in particular cognition, this transition from the body to the mind remains incompletely understood. There is much evidence to indicate that this is not a simple relationship and that mental activity can be highly developed without corresponding motor development in the past and present.

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